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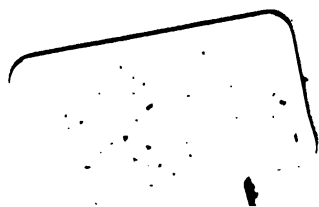
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AN
IMPROVED SYSTEM
OF
AGRICULTURE AND GRAZING.

118

A NEW TREATISE
ON
AGRICULTURE AND GRAZING:

CLEARLY POINTING OUT TO LANDOWNERS AND FARMER
THE MOST PROFITABLE PLANS.

TO WHICH ARE ADDED
REMARKS
ON
THE POOR RATES, THE EMPLOYMENT OF THE
POOR, &c.
AND ON
THE DESTRUCTION OF THE BLACK PALMER.

BY AN EXPERIENCED FARMER.

SECOND EDITION.

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PREFACE.

IN offering the following pages to the consideration of the Agriculturist, the author is aware that he shall have to contend with no inconsiderable difficulties, arising from prejudices in favor of the old system of Agriculture. Nevertheless, *having been twice honored by a medal from the Agricultural Society*,* he does not hesitate to submit to the candour and discernment of landowners and the practical farmer, a plan, which, if pursued as laid down in this publication, will, he is confident, greatly benefit both the landlord and the tenant.

An intimate acquaintance with his subject for a period of upwards of forty years, has convinced the author that the present practice of agriculture admits of very considerable improvements.—It is on this ground that he rests his claim to countenance and consideration, and he persuades himself that he shall not appeal in vain to the liberality of those valuable classes of the community—the landowners and their tenants—whose interests this publication more immediately concerns; satisfied as he is, that his little work will be found to contain information at once interesting and *exceedingly valuable*.

In the following Treatise the author has confined himself solely to HIS OWN EXPERIENCE and observation—being

* The author had first a Silver, and afterward a Gold Medal, voted to him by the Agricultural Society.

convinced that this was the only safe course for him to pursue: for he has found that many of the works on this important subject, which have come under his notice are only calculated to mislead the less experienced cultivator. He has endeavoured to set forth, in a concise but clear manner, the best methods of conducting extensive and small farms, for the growing of wheat, and fattening beast and sheep; together with other valuable information, which cannot fail to benefit the community at large, and more particularly those engaged in Agriculture. Whatever may be the success of this publication, it claims for its author no higher merit than goodness of intention, and the simple recommendation of its practical utility.

In this work is most clearly shewn, the modes of making land profitable, by increasing the produce considerably beyond the common average;—improved methods of growing wheat and keeping sheep, applicable to all sorts of soils,—which have been adopted by the author with complete success;—together with a great variety of other valuable information on Agriculture.

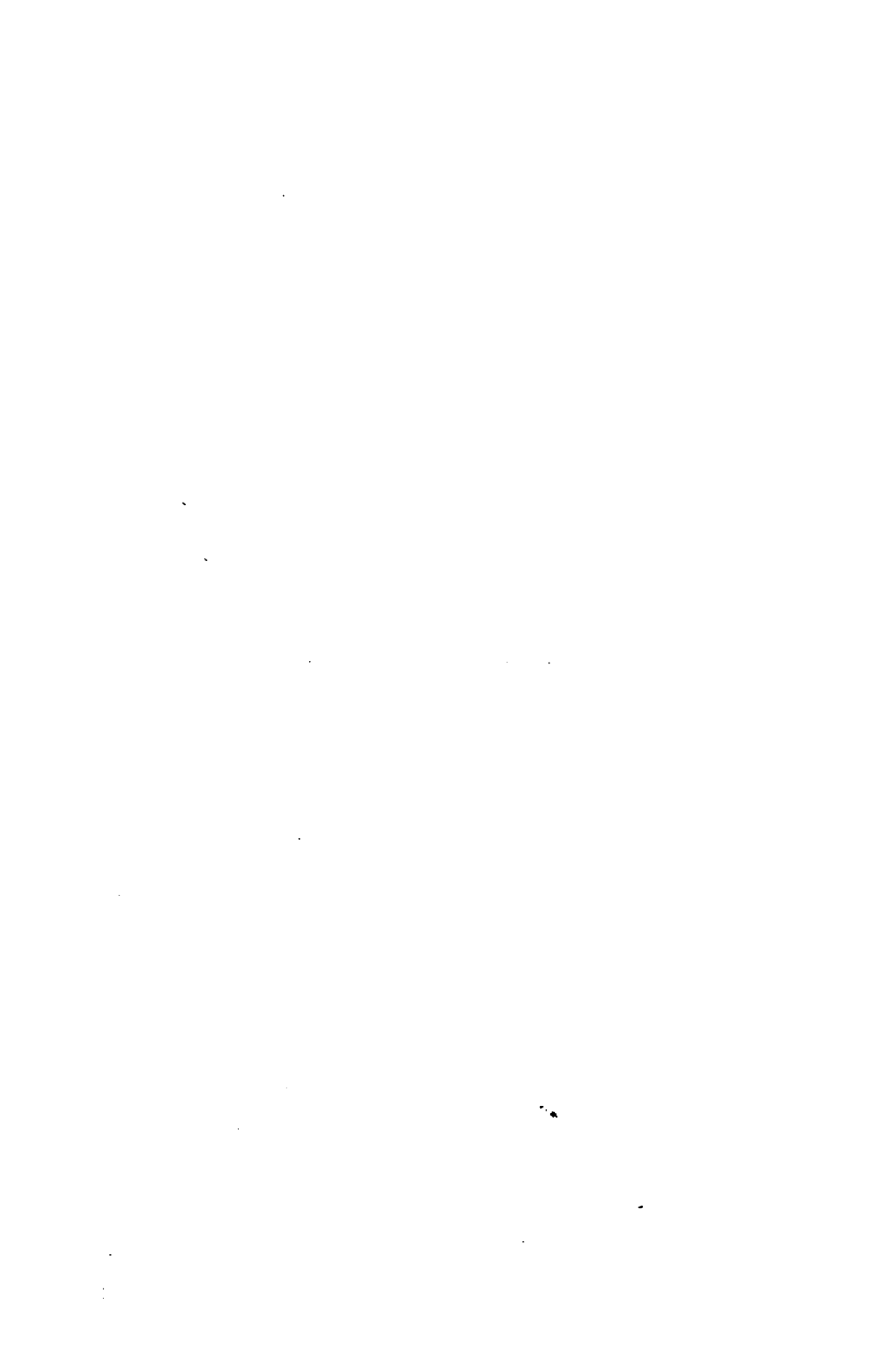
Cultivators of land ought well to consider how much and how many depend on their judgment for support. Many farmers have their doubts what methods to pursue to make the most of their land; those may rely on the plans the author has recommended in this small publication, for insuring lasting profits. Keeping the extra number of sheep on the land, as is recommended, not only enriches it, and causes it to produce better crops, but will furnish a large supply of food and raiment for the increasing population.

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ADVERTISEMENT.

The author requests indulgence for all errors of grammar or composition that may be found in his Treatise. It has been his study to point out, in the plainest terms, the most useful and profitable plans—the results of more than forty years' experience:—his education and habits of life prevented his doing this in refined language or a captivating style.



IMPROVED SYSTEM; &c.

CHAP. I.

Observations on the Author's improved System in respect to Fallows, &c.

THE author, for many years, saw the necessity of pressing and dressing with sheep a fallow intended for wheat, whereby the future plant might be strengthened, so as to enable it to bear the frosts and thaws of winter without injury and produce a good crop. At the same time he saw how desirable it was to adopt some means which should cause a fallow to pay its own expenses in rent, rates, and tillage; instead of its remaining as heretofore a drawback on the farmer's profits.

He first tried rape upon the fallow; which fully paid rent, rates, and tillage, by fattening sheep and lambs for market; but he could not get the wheat to grow well after it, if sown the following autumn.

He then concluded that there wanted a plant of much quicker growth, adapted to the fattening of sheep; and knowing wheat to grow kindly after trefoil, thickly sown, found upon trial, that this was the very thing wanted; and that the vegetable manure furnished by the rotting of the roots of this plant, benefitted the future crop.

The feeding off vetches on the land intended for wheat is a good preparation, and will help to keep many sheep; but the seed is more expensive, and

vetches do not allow time to make an early fallow that is kind for wheat. Besides, sheep do not improve half so well when eating vetches as when eating trefoil, if sown as thick as is herein recommended: this will also be more lasting feed, as there is time to make a good fallow before the trefoil seed is sown; but vetches require to be sown when there is no chance of killing grass or weeds. For a fair trial, a few lands were sown with trefoil seed in the middle of a field, where the other parts were vetches: both were fed off at the same time with sheep, and the field sown with wheat; but the wheat was much better after the trefoil than after the vetches, and yielded full one-fourth more. On pulling up the wheat, the author found the roots much stronger as far as the trefoil went, and the straw at harvest was a fine healthy yellow; more so than the wheat after the vetches. Joseph Smith, Esq. of Westbourn, had eleven sacks and two bushels per acre, after trefoil sown as directed by the author; and in the same field, only seven sacks per acre were grown close alongside.

It happens in most farms to be difficult to get sufficient manure, and turnips will not grow well without it; but trefoil seed will grow on any soil, without manure; and it will cause any sort of grain to grow more kindly by the rotting of its numerous roots, and the dressing left by the sheep in feeding it off.

CHAP. II.

An improved Method of growing Wheat and fattening Sheep.

PREPARE an early good fallow (as if to sow turnips), and in the month of April or May, let *half a coat of manure* be applied; then sow from 20 to 25 lb of trefoil seed, per statute acre; *this*

will give two or three months' excellent sheep feed before the time of sowing wheat, which is to be done on one ploughing, and whilst the ground is fresh. The land should undergo the number of times of harrowing as in a common lay, to make it very close. From the matting or great produce of the trefoil, and the treading of the sheep, it will be found that the land will come up very close, which is the thing desired; in order that the alternate frosts and thaws during winter may not affect the plant so as to loosen it and draw it out of the ground: for when that is the case, a thin sample and a lessened produce will be the two certain consequences. The dressing left by the rotting of the trefoil roots, will amply make up for *the other half coat of manure*; by which saving the farmer will be enabled to apply it more liberally to his turnip crop.

The use of trefoil is well known as a superior feed for sheep, and being thus procured at a time when feed is generally scarce, it will be found extremely advantageous, since it will finish off the late lambs and ewes for market; whereas a bare fallow yields no such advantages. This method also prevents wheat becoming thin on the land, renders it less subject to blight, and from the compactness of the soil, the redweed and other annual seeds, will be prevented from growing. Neither will it be so liable to the depredations of the slug or wire-worm.

To roll the land early in the spring will also be of service in keeping the soil close to the roots. This being a very material consideration, ought to be attended to; as the prosperity of the crop depends chiefly on this circumstance. The author has seen wheat improve after being harrowed and rolled, similar to turnips after hoeing.

All wet lands should be well water-furrowed when the trefoil seed is sown; as by those means,

a season for wheat is secured on any wet soil. Should it prove inconvenient or impracticable to lay out the half dressing previous to sowing the trefoil seed, fair crops of wheat may be grown on most soils with the dressing left by the sheep and the rotting of the trefoil roots. It may not be convenient to work all the land of a large stock farm on this new system, a greater supply of winter feed being required by some farmers than by others; in that case, the author recommends the following four-lain system: viz. one-fourth of the land to be sown with turnips; one-fourth with barley or oats, one-fourth with seeds for feed or hay, and one-fourth with wheat; and so on in succession; except the poor land of the farm, which should help to assist the best. *When the best land has to assist the poor land, the whole becomes poor together.*

Clover and trefoil seed should be sown very thick, as that not only furnishes a double quantity of sheep feed, but the rotting of the roots under the surface furnishes additional support for the future wheat plant; and the treading of the sheep in feeding it off makes the land firm and prevents the weeds from growing.

The poor land should be sown with sainfoin, or lucerne if suitable, or left in pasture, to enable it to bear corn after a few years' rest: which will assist in keeping a flock of sheep to help the best land, besides saving a considerable expense in seed, tillage, and manure: and will thereby prevent what is generally termed, *the farmer's sowing himself out of doors.*

The four-lain system makes the labour and tillage of the land regular and less expensive; and is equally suitable for breeding stock sheep as for fattening sheep. Besides which, the method of making pasture of the poor land to assist the best — as it enables the farmer to keep a large quantity

of stock sheep to go to the fold,—is so great an improvement for wheat, that it generally ensures a good crop. If the farmer goes on, without system, to fallow for wheat at the time he is preparing for turnips, he is obliged to keep a number of horses; which is likely to ruin him if he is a tenant.

The four-lain system is eminently calculated for improving and keeping up the strength of the land, which is of the utmost importance; for should land become poor or foul for want of proper management, the occupier's capital must in consequence decrease.

Sheep may be kept with considerable advantage upon all lands, by adopting the two-lain system, or new plan; but not so profitably upon the four-lain system, particularly on wet lands; because the former would be a summer feeding to support immense quantities of sheep. So that the two-lain system is recommended on as much of a farm as the occupier can make convenient; and the four-lain system on the other part; which will make the whole more profitable.

To increase the stock of manure is the first step to making the land advantageous. The author begs leave to suggest the proper method of effecting that object. Let the cultivator manure the land for sheep feed, (i. e. for turnips, or trefoil, or other young seeds,) that by so increasing his sheep feed he may be also enabled to increase his stock and flock of sheep, which will give a considerable increase of suitable manure for a greater quantity of corn, independent of the advantages to be derived from an extra number of sheep. This, it is probable, will make a difference of the whole rent of the land compared with the ancient system of dunging for wheat instead of turnips, and not well providing for sheep. Besides, this course will be attended with

other advantages : viz. it will be found that the wheat crop will be less subject to slugs and blight : for it will be observable, in nine years out of ten, that the spot where the dung mixen was laid the preceding year, will be almost sure to be blighted : wherefore the author conceives that dung, if not employed to produce sheep feed before wheat, will often cause blight ; for if a close were manured all over in the same proportion as the spot on which the mixen was laid, the whole close would most certainly be blighted in the same manner.

Independent of these advantages, the author is confident from his experience, that wheat does not yield so well where the manure has not been applied for sheep feed previous to the land being sown with wheat. Under these circumstances, he considers it more profitable to well dung for turnips in general, and that the method here recommended is eminently calculated to keep up the land in a high state of cultivation and improvement, exclusive of the profits from the sheep and corn. He also recommends the folding of sheep on land intended for wheat, where it is convenient, and for the poorest soils to be made into sheep walks ; as the method most certain to ensure good crops.

A good crop of turnips is of the utmost importance to the farmer, and may be said to be the mother of grain : since it furnishes a lasting supply of winter food for sheep, and produces manure for corn. And as it but too frequently happens that the farmer is disappointed in realizing a good crop of this valuable produce, the author here begs leave to suggest what he conceives to be the best method of ensuring a good crop : viz. let the land be ploughed sufficiently often to make it free from grass and weeds, and to reduce it to a fine pulverized state ; then spread good strong manure and plough it in, not too deep. Immedi-

ately after, sow the turnip seed, then harrow and roll, so as to make the land very close; this will cause young turnip plants to grow so quickly that their enemy, the fly, being less sheltered by rough clods, will not be able to injure them. Much depends on *good seed* being sown *immediately after the plough*, for the plants to get the start of the fly.

Many persons sow their crops upon a middling fallow; but this practice is productive of the greatest evils, and is only calculated to yield at the best a middling crop; and in many cases, no crop at all. It is therefore much to be lamented that such a practice should exist, and its total abolition is strongly recommended: because, after a middling fallow is made, one more ploughing would perfect it, and the land would thereby be made so free from grass and weeds that a good crop of turnips might reasonably be expected; and the growth of couch-grass and weeds would be considerably checked.

The reason why the author recommends the land being made so close by well harrowing and rolling after sowing the turnip seed is, because he has frequently known whole fields of turnips fail where that has not been done, though in spots or places (*viz.* under the hedges), where the soil was made close by the turning of the horses in working the land, the contrary has been the case.

This, therefore, is a convincing proof of the necessity of making the land close after sowing turnip seed, upon a good fallow; and of well manuring to insure a good crop—the value of which exceeds all calculation. As a further proof of this assertion, the author begs to advert to the circumstance of a close in Hampshire that was sown with clover seed; one half of which was productive and good, whilst the other half entirely failed and proved altogether unproductive, although the

whole was sown at the same time and with the same sort of seed. This circumstance could not be accounted for by the occupier; for the nature of the soil appeared to be of one quality (though not of a kind sort for turnips). At length, after considerable enquiry, it was discovered that exactly so far as the clover was so exceedingly fine, a good crop of turnips had been fed off with sheep about seven years before; since which time turnips had not been grown there. Nor had turnips been grown on the other part of the close where the clover had failed, within the recollection of the occupier. Sweed turnips are most earnestly recommended for needful March and April food, as there is no reliance on other sorts standing a hard winter.

The principal art in agriculture is, to make the land profitable, and at the same time to keep it in an improving state for future crops; which object the foregoing methods are calculated to effect.

It will be found profitable, as before observed, to work a convenient part of a farm on the two-lain system and the other on the four-lain system; as both together are calculated to keep immense quantities of sheep both in summer and winter, on nearly all sorts of soils. Each method ensures a crop every year, and at the same time improves the land.

The tillage being thus regulated will leave a good opportunity to prepare for turnips, and the system will be found eminently calculated to improve the condition of poor land. Indeed the author has had the satisfaction of knowing poor land so much improved by the four-lain system as to be esteemed good land. The method is, always to have one-fourth of the land in turnips, to be regularly eaten on the land by sheep; then barley or oats; then clover or trefoil seed for

sheep feed ; next wheat, then turnips again ; and so on in regular succession. But on kind soils, the farmer might, what is called steal a crop of peas from about one-fourth of his turnip-lain ; and a crop of trefoil sown in the wheat the spring preceding (to be fed off with sheep), from another fourth of the turnip-lain ; if the peas and trefoil can be cleared off the land early enough for it to be sown with turnips for spring sheep feed. Feeding off the trefoil will not only help to keep many sheep, but will cause or produce much dressing, and thereby aid in securing a good crop of turnips for spring feeding. Thus getting a crop of early peas and trefoil on half the turnip-lain, cannot fail to make the four-lain system exceedingly profitable.

The author recommends that the land be well dressed for peas, which should be sown as early as the season and soil will admit. And if cut a few days before the general time for cutting, the goodness of the fodder will make up for a little deficiency of crop, if near a good market, and give a better chance of preparing the land early for turnips. To dung well in the winter, will not only cause peas and turnips to grow better, but will much shorten the summer labour, which is very desirable ; as a great deal of labour is required about the time of preparing for the turnip crop. Some winter vetches, or a little rye, might be sown as soon as the wheat crop is harvested, to help to support the farmer's cultivating cattle ; provided it can be cleared off the land a little before mid-summer, to allow time for the land to be prepared for turnips, so as not to alter the four-lain system. It will be in vain to attempt this very profitable method unless there be a sufficient strength of cattle to keep the land well cultivated.

The very poor soils of a farm ought to be thrown out of cultivation for corn, to help keep

stock; and thereby to help support the better soil in the production of full crops: for if the best soils help the poor soils, by sparing its manure and cultivating strength, it will be found a very unprofitable plan.

CHAP. III.

On the Benefits arising from a judicious choice of Seed Wheat.

WHEAT, like other grain, grows after its kind—and the crop will be found to partake very largely of the good or bad qualities of the parent seed. For this reason the author strongly urges upon all farmers to be particularly careful in the selection of the seed for this important part of the annual crop. The better sorts of white wheats are the most profitable both for the farmer and the baker; and if a careful selection of the finest ears be made from such, when the crop is at perfection, and set apart for seed, an extra produce of a bag of good flour per load might be fairly reckoned upon.

This selection might be made at an expense which would not average more than 20s. per load for the seed wheat, and would return an ample profit for the trouble; and by giving it a change of soil, the whole crop would most likely be quite equal in quality to the ears so selected.

Farmers should take especial care never to sow smutty wheat; as the crop will turn out after its kind—and the loss in price in general will be £2 per load, besides the deficiency in produce. The best pattern for the wheat grower will be found in the practice of the growers who supply Guildford and Godalming markets; where they find their reward in realizing about 50s. per load more than the average price of brown wheat elsewhere in England.

Perhaps some farmers on reading this recommendation of the superior sort of white wheats will say, that brown wheat is most suitable for their land. But they will find on enquiry, that the best sorts of white wheat, with which Guildford and Godalming markets are supplied, are grown upon *all sorts of soils*; and in general on poor lands; which is a great encouragement to them to make a trial of white wheat. And if they take care to obtain seed of the best sorts, selected in the manner herein pointed out, they will find the result greatly to their profit and satisfaction.

Experience has proved to the author that the change of seed wheat from South to North is the most beneficial change. On one occasion he supplied good white wheat for seed from the South side of Portsdown Hill (which grew near the sea), to a farm about twenty five miles North of it, where one-half of a large field was sown with it, and the other half with brown wheat of the farmer's own growth. The result of this experiment was, that when the crop was harvested the white wheat not only exceeded the other in quality, but the yield proved to be about one-third more in quantity per acre.

But, even if the growing of the better sorts of white wheat and the careful selection of the seed which I have pointed out should become so general as to prevent its commanding so large an extra price as the farmers who now supply the before mentioned markets obtain for it,—the pleasure of carrying such a sample into the market as is always first sought after both by the merchant and the baker, is a gratifying reward to the farmer; and he will always find such wheat like ready cash or Bank of England notes.

The selection of the finest ears for seed, if steadily pursued, is likely in the course of time to produce a similar good effect to that which the

farmer finds in selecting the best turnips and transplanting them for seed;—which has been found productive of surprising benefit:—one pound of seed so obtained having proved equal to 20 lb grown in the common way—and crops raised from such seed are, in quality, as well as quantity, vastly superior to those obtained from seed taken in the common way.

As wheat is the staff of life, and whatever tends to improve its quality and increase its growth must be a great national as well as individual benefit,—at once rewarding the toils of the farmer by a profitable return and increasing the comforts of the poor—the author submits to all agricultural societies a proposal to offer a prize for the best 20 sheaves of white wheat selected for seed according to the foregoing plan.

CHAP. IV.

General Observations on growing Wheat.

IF wheat be sown after peas or beans, it should be on the best sort of close heavy soils, made kind for wheat by dragging and becking it over; so as to get the land very clean and the surface of it in a fine pulverized state. By which means, all the slugs will be destroyed, as also the seeds of the annual weeds; and the fine mould or soil so pulverized on the surface, being ploughed in, will then be at the bottom, (as the wheat is to be sown with once ploughing,) and the small fibres of the wheat will therefore root into the fine mould or pulverized soil at the bottom of the furrow, which is more kind for it. This is infinitely better than ploughing two or three times after peas or beans for wheat crops, and a much better way to rid the land from grass and weeds. The author conceives that dragging and becking the land over after peas

or beans, may be done nearly as cheap as ploughing it, and has no doubt of its being double the service, if becked over in fine weather—which is certainly the most proper season for it to destroy slugs and grass. And he concludes that poor people would gladly embrace such employment after harvest, that being a leisure time with them. This also would in some measure help to ease the poor rates ; as men, women, and children may use the beck to do the needful work, and thereby enable the farmer to manage his farm with a less number of horses ; which is of the utmost importance to him : for if a farmer keep too many horses, it is more than probable that it will turn the scale against him in a few years. If not convenient to have the land becked over as recommended, let it be ploughed shallow, and have plenty of harrowing and rolling in dry weather, to make it in a dusty state, and to destroy slugs, which often commit much havoc in wheat. Becking the land over is similar to hoeing, only it moves the soil something deeper.

The author strongly recommends the foregoing observations to the reader's serious consideration ; and he earnestly recommends the two-lain system of cultivation to be adopted on as much of the farm as can be spared conveniently. Cultivating with trefoil for fattening and finishing sheep and lambs for the market, and then sowing the land with wheat, so as always to have one half wheat and the other half trefoil, in regular succession, on good wheat land, is an excellent plan. But it would make the farm more profitable if only one-third of it were cultivated on the two-lain system, as detailed in the former part of this treatise ; because, as has been before observed, it is the dressing and pressing of the sheep and the rotting of the trefoil roots, which is so conducive to a good crop of wheat.

Farmers ought to avoid a light fallow for wheat, for however well it may be dunged, yet the farmer need not expect a good crop; because the frosts and thaws affect the plant and draw it out of the ground. And light fallows also encourage the growth of the red poppy and other annual seeds, which totally ruin the crop.

It is also advisable to avoid sowing wheat after peas on light barley soils; as the land is in that state naturally very unkind for wheat, even if dunged for it. Much benefit will be derived by feeding young wheat close with a flock of sheep as soon as the land is sufficiently dry, in the month of March, so as to eat it down about two or three days at a time. When the land is likely to be made dusty by the feeding, then let it be well harrowed, rolled, and made close, filling up all the crevices, which will destroy the slugs, &c. This very much encourages the wheat plant; and the crop is also made less subject to the blight. It is much better to feed the wheat close, in two or three days, than to permit the sheep to remain nibbling it for a longer period. Wheat ought not to be eaten when getting the least stalky, as the stalk is the part which produces the ear, and if once injured, will be altogether unproductive. In the month of March, after the sheep have eaten the wheat, it is very profitable to sow soot, from the seedlip, by hand. The quantity generally used is from ten to fifteen bushels per acre, and it has proved beneficial in a wonderful manner, particularly where wheat has been in a weakly state.

CHAP V.

Observations on the four-lain System.

THERE is a good and profitable four-lain system, and a bad and unprofitable four-lain system. The

profitable system is, to make a good winter and summer fallow and to apply all the dung that can be spared in order to secure a good crop of turnips the first year; the second year should be barley, the third broad clover, or Dutch and trefoil mixed, especial care being taken that it be thickly sown with good *new seed*;—then the fourth year wheat. If the young clover plants be dressed with ashes, the extra crop of hay or sheep feed will not only repay the trouble and expense, but a good crop of wheat might be reckoned on; as the ashes will destroy the grub, slug, and wire worm; and the roots of the thick sown clover, by rotting in the ground, will nourish and support the wheat plant. The author when managing 700 acres near Portsdown, as bailiff, for a widow and several fatherless children, proved the value of this system, greatly to the benefit of his employers.

But the bad and unprofitable four-lain system is still in full practice on many farms:—which is sowing rye grass seed with the clover seed, and sometimes all rye, instead of clover as pointed out in the preferable system. The author is a great advocate for sowing wheat after once ploughing on good clover lays; but is decidedly opposed to sowing wheat after rye grass. He has farmed nineteen hundred acres of land at a time, but has never sown *any* rye grass; because he has so often seen wheat crops fail after it (and even where clover has been mixed with the rye) as to convince him, that though broad clover, or Dutch clover and trefoil, thickly sown, are favourable to the production of a good crop of wheat;—rye grass is the reverse.

Rye grass is very suitable for sheep walks and pastures; but that it is an enemy to wheat the author has seen a plain proof, in his travels in the present year (1837). On a farm where the land

is of very good quality, fifty acres of wheat were harvested after rye grass. The crop proved very short; he has no doubt that it was quite three sacks per acre less than it would have been if it had been sown after clover lays prepared in the way recommended in the preferable four-lain system. Here, then, was a loss to the farmer of £200 on his wheat crop, besides clover, to the value of £50 (reckoning two cuts and sheep feed); exceeding the whole value of the rye grass crop; which, on a common average, is about £4 per acre. And besides this, the land lost the advantage which it would have derived from the rotting of the roots of a thickly sown crop of clover—which is nearly or quite equal to a half dressing of manure in the ordinary way, and prepares the land for future crops.

This shows that there is a good and profitable four-lain system, and a bad and unprofitable one; and it is earnestly hoped that the observations herein offered upon them—the result of many years' practical experience—will induce farmers to abandon the old and bad system and to adopt the good and profitable one.

Redweed is known to injure wheat crops after fallowing; but this may be relied on,—that where wheat is sown on good clover lays after once ploughing, redweed will never injure the wheat crop, although the land may be naturally subject to it.

It cannot be a matter of wonder that so many farmers ruin themselves and families by neglecting to adopt the right method of tillage, when we reflect upon the loss arising upon fifty acres of wheat, as pointed out above, by the practice of the wrong system and sowing wheat after rye grass.

CHAP. VI.

On the great utility of Sainfoin.

IN the management of poor dry soils the author's earnest recommendation is, to save as much of the labour and expense of tillage as possible ; — and to increase the stock of sheep. A farmer will find it profitable, where it falls to his lot to occupy poor upland dry soils which are adapted for that kindly-ordained plant — sainfoin, to keep one-third of his poor land well planted with it ; — which will greatly increase his sheep feed and be the cause of manuring the land for future crops. The author well knows that where a farmer has 900 acres of such land, if he keep 300 acres of it well planted with sainfoin, he will cause the poor soils to supply the better with manure by maintaining an increased flock of sheep ; and he will find that the remaining 600 acres will fill the barns much more effectually than as though the 900 acres were under tillage upon the old plan.

This system of management upon a farm of 900 acres would, in the course of a one-and-twenty years' lease, make a surprising difference in the farmer's condition. When the saving in seed and tillage is added to the increased profits from the flock and the improved crops, the difference might, at a moderate calculation, be set down at near £1000 a year. And smaller farms would derive a proportionate benefit by adopting the improved system of management.

It is well known that the poorer soils of many farms will produce from £5 to £7 or £10 worth of sainfoin-hay or seed and after-feed for sheep, per acre (beyond the expense of seed and tillage), for about seven years, — if well planted. But, instead of selling much sainfoin-hay the author recommends, as a better mode of securing extra profits, and in order to *benefit the sainfoin plant*

for *future crops*, to let it all be saved for seed when there is a *prospect* of a *good crop*, which might be ascertained in good time for the farmer to make his choice of either *hay* or *seed*. From 5 to 7 or 8 sacks of sainfoin seed per acre may be expected; which will command at least 20s. per sack.

Forty-five years ago the author sold sainfoin seed to Mr. Hawkins to sow 50 acres of poor land on Portsdown Hill, at 50s. per quarter. That gentleman benefitted by this operation in the course of six or seven years (as the author has good reason to believe) to the amount of about £1000:—because, if he had not planted this 50 acres of his poorest land near the top of the hill with sainfoin, it would have so robbed his better land of manure and tillage that less corn would have been grown on it, and the sainfoin-hay which, from being so near Portsmouth, commanded a good price, was a clear profit, and there remained a considerable quantity of sheep feed into the bargain.

There are other advantages arising from saving sainfoin for seed, which must not be overlooked. The plant is not only benefitted by it, but the haum and hulls are both suitable for stock sheep and cattle. To grow good crops *for seed*, the quantity sown should not exceed five bushels of *good new seed* per acre; because when sown too thick the produce is *more leaf than bloom*; and, consequently, a less produce of seed for market is the result. The most profitable plan is to sell sainfoin seed, and not hay, because in spending the seed, haum, or hay, on an increased stock of sheep, it will be very soon proved that the farm has been benefitted in a variety of ways—but more particularly by the great increase of manure thereby placed at the farmer's disposal and the extra crops of corn grown in consequence of it.

To obtain a more early and profitable return, sow 12lb of good new trefoil seed per acre with five bushels of sainfoin seed, which will give a good swarth of hay or seed the first year. Without the trefoil seed an abundant crop cannot be expected the first year.

As a proof of the utility of the system the author now recommends, he will state another case within his own experience. Some years ago he persuaded a farmer who occupied a farm of 630 acres, and was then growing very light poor crops of corn, to sow about one-third of his land with sainfoin, and to select the poorest soil for that purpose. This enabled him to apply a larger quantity of manure and more tillage to the remainder of his land;—in fact, it caused the poor land to help the best,—which should always be the farmer's object; and the result was that he afterwards grew more corn upon the 400 acres than he had been accustomed to produce with much more toil and expense, from the 630 acres. The change saved him and his large family from the ruin that was fast overtaking him under the old plan of management.

The author recommends the ashing of sainfoin only when the crop begins to fail, to cause one good crop, and then to leave it for a sheep walk. But other lands should be then sown in the same manner to supply its place.

CHAP. VII.

Instructions how a Farmer may be a Fieldsman, and know how to make Men and Horses do their duty.

It will be found highly advantageous to the farmer to keep his cultivating strength at work

together in the same field. It is known from experience, that ploughs and harrows go more briskly when together, and that three teams so employed, will plough as much as four, if separated in different fields. The success of crops, depends much on well harrowing, with all sorts of grain. When all are working together, the farmer's eye can be over the work to see it performed properly.

If a farmer gets five acres only ploughed extra, per week, by keeping all his strength together, that is no inconsiderable advantage. All sorts of grain and seeds should be sown the same hour that the land is ploughed ; it is then buried whilst the earth is still fresh and moist and grows much better. It is impossible for a tenant to meet his payments, if ploughs and harrows are deficient in speed, or if the tilling of the land be not properly attended to.

When a man begins farming, he ought to be particular as to the kind of cattle he tills his land with ; for if he has a dull heavy sort of cart horse, it is most likely there will be half an acre of ploughing deficient, per team, every day, making nearly fifty acres per month from four teams ; and if only ten acres per month, it is most likely to turn the scale against him. The best sort of horse used in cultivating land is the half-bred horse, between a bony blood horse and a short legged close cart mare. Such a breed of horses, where two are able to draw a plough, is not only a great saving of expense in the tillage of land, but it will cause the farmer's work to be in a very forward state, so as to enable him to provide an extra quantity of turnips for the keep of a greater number of sheep, which will insure the produce of a much greater quantity of corn ; and all arising from the speed of the ploughs and harrows.

CHAP. VIII.

On sowing Corn at the proper Season of the Year ; rendering the Wheat Plant healthy and less subject to Blight ; and on the propriety of sowing Lent Corn as early in the Spring as the Weather will admit.

FROM the author's own experience, in England, wheat should be sown or drilled on what is called cold backward land, between the 29th of September and the 20th of October ; but on warm soils, the most suitable time for sowing or drilling wheat is between the 20th of October and the 10th of November, so that the wheat may be grown above the ground three or four inches and be safe from the depredations of the birds before Christmas.

When wheat is sown earlier, it is more subject to weeds ; and what is called 'winter proud and summer poor' is, when wheat gets very forward in winter by early sowing. A few days in the spring will then change it to a yellow unhealthy colour, at a time when it ought to be improving ; and if wheat is sown much later than the author has pointed out, the frost is likely to catch it in its milk (which is when the corn is in its milky state and beginning to spear) ; so that between frosts and thaws, and the birds, a thin plant of wheat is produced that is likely to yield badly at harvest. A thin crop of wheat is certain to be blighted, more or less, so as to cause a thin lean sample and produce but little flour ; and all wheat sown late is more subject to blight than wheat sown at the proper time. There have been, by chance, a few good crops of spring wheat after a fine kind spring and summer, even when sown in April ; but it has sadly misled many farmers who have sown wheat so late, they having had scarcely any crop to reap. A farmer's own reason ought to tell him that in a dry spring, or a dry summer, a sufficient crop to pay him could not be expected.

If a farmer depends on spring wheat, the first dry spring will turn the scale against him: so that the wheat sown in autumn is the crop mostly to be relied upon. Farmers are usually a month too late in sowing their spring corn, on a general average, which they severely feel in a dry spring and a dry summer, by often getting less than half a good crop. But whether a kind summer or not, when sown late, it produces a poor middling sample, and such barley as a wise maltster does not like to purchase to pay duty on, as he can afford to pay duty much better on a good sample. As some further proof, when a spot is missed, in sowing a field, (which is often the case,) and sowed only a few days after the other part of the field, he has observed, often, that it has not been half so good as that which was sown only ten or twelve days before. If spring corn be sown early, although a few cold days may affect the blade, it will recover; but if sown late, dry hot weather will affect the root, so as effectually to blight the farmer's hopes of a good crop.

CHAP. IX.

A preventive of Smut in Wheat.

It is often seen, that a twentieth part of the wheat ears are more or less filled with smut bags instead of wheat; and this is not the whole loss that the farmer sustains; the miller requiring an abatement of a fourth or a fifth in price. The following is recommended as a sure remedy. Provide good clean wheat seed, (see Chap. iii.) and to every four bushels allow a full bucket of black dungy water from the soak of the farm yard, so as to make it very wet, mixed with a little salt, salt water, or brine, to prevent its being smoky, which is so unpleasant to the seedsman: then add a suffi-

ciency of fresh slacked lime to dry up the moisture, and turn it often, to get the lime into every wheat corn. After it has remained twelve hours in the heap, it will be fit for sowing, without the least fear of having smutty wheat.

This simple and easy plan the author adopted many years on different farms, where many hundreds of loads of wheat were grown, without ever being asked for an abatement on account of a smutty sample. The author also recommends washing seed wheat in the same sort of water as before stated, the day before sowing; by this means the light imperfect corns and seeds of weeds will swim at the top, and being skimmed off, will cause the wheat to be more clean and perfect; if it be then well limed, as before directed, there will be no danger of growing smutty wheat. It still remains a doubt with many farmers, whether it is the lime or brine that is the preventive, but the following will prove that lime is the remedy. A leaky vessel arrived near Chichester, many years ago, laden with wheat, which was soaked with salt water. It was purchased by farmers to seed the land—several sowed it without liming, and others with lime; those who used lime grew clean wheat, and the others who sowed it in the state in which they bought it, had bad crops of smutty wheat. The author has often sown a little dry unlimed wheat to finish a field, but has observed that it has not, in general, grown so free from smut as the other.

CHAP. X.

To have a profitable, quick, and good Return, with small Expense.

IN cultivating two or three hundred acres of land, the farmer will do well to sow twenty or thirty

acres with rape seed at the latter end of May ; and if the land is well prepared, it may be stocked in about six weeks after it is sown ; which will fatten and finish for market great quantities of sheep and lambs, till near michaelmas ; then owing to having been fed with sheep, as pasture, (so as not to injure the rape stems,) it will stand the winter better, if the land is not too wet ; and in the following spring, to make the sowing of rape very profitable, he should let it stand for seed. A fair crop of rape seed is about forty bushels per acre, and the price in general something more than wheat, when purchased by the oil manufacturers in London. The profits are also much greater than a wheat crop, because there is neither seed nor tillage to be reckoned against a crop of rape seed ; that being well paid for the first summer in fattening sheep. Farmers would also find it profitable to have a field of rape for summer feeding, it being very kind in fattening sheep and lambs.

Experience has shewn that it is not profitable to sow wheat directly after the rape is fed off with sheep, because the roots are not sufficiently decayed. But if the sowing be delayed till the next autumn after the rape has been saved for seed, the land will be found in a fit and proper state to grow a good crop ; because every clod will be filled with the decayed and rotten rape roots, which are a great support to the wheat plant. And particularly so in close heavy soils ; as they open the pores similar to chalking the land, and are a good substitute for chalk or lime. It may be profitable for the farmer to give such land a change from corn throughout his farm, by degrees. In Russia, and in parts of Germany and Prussian Poland, from whence so much rape seed is sent to the Dutch and London markets, they find, that saving rape for seed, in the manner here stated, is a good and profitable preparation for wheat. If a farmer should

happen to have any sheep that are weak, unsound, or broken mouthed, or even slightly touched with the rot, rape will be the best thing to make them saleable to the butcher in a short time. When the author was about twenty years of age, he was sent to be bailiff over seven hundred acres of land, at Bedhampton, in Hampshire, where the flock was very subject to the goggles; sixty of them died a few weeks before, and the others were continually faltering, being poor stock sheep. He sowed twenty-six acres of rape, after preparing a good fallow and dunging it well; the rape grew so fast, that in one month after he had finished the field, he began to turn in the unsound sheep: they throve wonderfully fast; so that in a short time, the twenty-six acres of rape finished for market about four hundred, and caused the whole of the unsound flock to be sold on very profitable terms: indeed for more than sufficient to purchase a sound flock. But although there was so much dressing left in the land by feeding such a large quantity of sheep, the wheat sown in the following autumn was very short all over the field (which contained three different sorts of soil,) and proved a very bad crop at harvest. This shows that land is not kind for wheat immediately after rape has been fed off. Had it been saved for seed the following spring, the seed would have been worth double the wheat crop, and would have saved the wheat seed and expense of tillage. Saving rape for seed also gives much employment to the poor just before harvest, when it is so much wanted.

CHAP. XI.

On the propriety of saving Seed at particular Times, when good prospects offer to make Profit.

WHEN sainfoin is clean and has a fine healthy bloom and the weather is fair and rather dry, a

great crop of seed might be expected, worth from £7 to £10 per acre. It should be cut rather green to prevent waste of seed, which causes the haum to be fair hay for horses, and produces a quantity of good chaff for working horses; making altogether great profits from poor soils. Some farmers have it mowed for hay, even when there is a good prospect for seed; but they might as well mow a crop of corn for hay. Such losses are often very great, through want of judgment.

The saving of sainfoin for seed refreshes the roots so as to produce a better crop next year: when this is considered, the seed is all clear profit, or nearly so.

Many large and small fields of trefoil, in a fine healthy bloom, and shewing great prospects of a good crop of seed, have been destroyed by mowing it for hay: whereas, had the farmer waited only eight or ten days, he might have had an immense quantity of seed, and the fodder would have been nearly as serviceable for cattle as hay; nay, sometimes better, when the hay is damaged by the rain. Frequently from £5 to £10 per acre have been lost in this way, for want of knowing better.

If a farmer get good turnips, the fodder of both sainfoin and trefoil seed might be used as a substitute for hay, without injuring a flock of sheep, and the farmer have the value of the seeds in his pocket, nearly all clear. So that saving clover, trefoil, and other seeds, at times, is very profitable.

It sometimes happens, that when turnip and rape seed are first thrashed, there is much trouble in preventing them from heating, and they necessarily remain for a considerable time on the barn floor before they are fit to be put in sacks for the market. The proper preventive of this is, when the seed first appears to be fit for thrashing, not to have it thrashed till it has remained four, five, or six days longer, that it might be properly matured by the sun. Then it will thrash well and

keep safe in sacks a long time, if required, without trouble or risk.

CHAP. XII.

A profitable Method of converting Rough Land into Tillage.

WHEN any rough land is meant for tillage, the most profitable method to have a good and quick return is, first to trench it up about ten or twelve inches deep, with a spade, in narrow ridges. After paring and laying all the grass and rubbish at the bottom of the trench to rot, put a light quantity of dung into the trenches, and plant potatoes. It may be well to trench early in the winter for the frost to pulverize it properly. This might be done and the land made fit for planting, at about four pence per rod, and a good crop procured, besides giving much employment thereby to the labouring poor. And it will cause the land to be in a proper state for turnips the next year; as all the turf and rubbish will be in a rotten state to aid their growth.

CHAP. XIII.

The Method of converting Arable Land into Pasture.

THIS is an important branch of agriculture and desirable in many cases. The author therefore suggests what he conceives to be the best method of effecting that object; and as a proof of its superiority over other methods, begs here to state, that on the 16th of November, 1801, a medal was voted to him by the Agricultural Society, in testimony of their approval of his plan.

Make a good fallow by the latter end of May, then sow to every statute acre, 4lb of Dutch clover,

2lb of cow grass seed, 2lb of rib grass seed (commonly called lamb's tongue), and 2lb of rape seed, to which add a bushel of percy grass seed. At the expiration of six weeks after sowing, it should be stocked with sheep, not pitched off, but fed like pasture, which will fatten the sheep well, if not over stocked so as to destroy the rape plants. Feeding off the rape the following spring so improves the new pasture that it is sure to become good. If it is required to make the land nearly equal to good old pasture without much loss of time, it should be inoculated with turf taken from sound good pasture, chopped about three inches square, planted nine or ten inches apart when the ground is moist, and well rolled in; which will make good pasture of fair land in a short time; taking especial care to let two-thirds of the quantity of seed before mentioned, be sown, as the land will otherwise become foul in the vacant spaces.

In all cases of wet land, the author recommends the farmer to be particularly careful that no stagnant or improper quantities of water remain long on the land, as that would materially injure the growth of the herbage.

CHAP. XIV.

An excellent Method of preserving a Crop of Wheat from the destruction of the Slug, Grub, Wire-worm, &c.

MANY thousands of acres of wheat have been destroyed by slugs after a mild winter and wet summer; either of which greatly encourages the increase of these destructive vermin, which eat and poison the young wheat. Therefore, to destroy them, after the farmer has failed in the means used to prevent their breed, ought to be a first care.

The wheat that is most subject to slugs is that which is sown on a clover lay, and after peas

and beans on wet soils. An experienced farmer ought to know what state his land is in, and whether it be infected with slugs or not; and if it be, he ought to allow nearly a bushel more seed wheat per acre. To destroy slugs, let the farmer apply fresh slacked lime in a flowery state, sown by hand from the seedlip over the land early on a fine mild morning; that being the time when they are all on the surface feeding on the young wheat plants, it will entirely destroy them wherever it falls. But it is necessary afterwards to inspect the wheat on a fine mild morning; as it frequently happens that after mild winters there comes a fresh breed of slugs from the eggs which were deposited under the surface of the land; and should that be the case, the like remedy must be repeated, so as to save the crop of wheat. The author has applied it with the most complete success. To sow the land immediately after ploughing, viz. on the same day, instead of delaying it for three or four days, is a great preventive; because the principal part of the slugs are then at the bottom of the furrow, and when the land is well harrowed they cannot all get up to the surface to destroy the young wheat plant, and they will not injure the root.

The author has frequently experienced the beneficial effects of this system; and the contrary, when the sowing has been delayed for a few days after ploughing: wherefore he strongly recommends sowing immediately after; and the more so, because thus, in general, all sorts of corn get healed over with mould much better than they do when sown upon a stale grit; and as lime is manure to the land, the farmer ought not to fear this expense to save his crop. When a farmer suspects that his crops are likely to be injured or destroyed by the slug, grub, or wire-worm, he should strew fresh slacked lime over his land be-

fore it is ploughed for wheat, to destroy these vermin; and even if the experiment should fail, which is not very likely to be the case, the lime thus strewed over the land will not be lost, for it will in all cases assist the growth of the wheat: wherefore the author conceives this to be a good plan, and has no doubt, that in some instances, it will make a difference to the farmer of a whole crop of wheat on some parts of his farm.

Keeping a large flock of sheep on a farm, to feed close, is a great preventive.

CHAP. XV.

On the propriety of cultivating with Oxen.

To cultivate the land with young growing oxen is of great service to the farmer, and cannot be too generally adopted; as they do not require to be fed with corn like horses. And this is not the only advantage the farmer will derive from it, for during the time the young oxen are labouring they will be improving in their growth, and the labour will make them much more kind for grazing, and thereby supply the market with the best sort of beef; which must benefit the country more than cultivating with horses which are kept at a considerable expense and are daily becoming of less value from hard work; and ultimately, of no value at all. It is a fact which cannot be too generally known, that oxen labour much better in harness similar to that which is used for horses, than in the yoke; therefore the author has thought proper simply to notice this circumstance in his work, and recommends the adoption of it as the best plan. Although the Agricultural Societies have held out certain encouragements to farmers to promote the use of oxen in tilling land, yet those inducements have been found too inconsi-

derable for effecting so desirable an object; the author, therefore, strongly recommends to those excellent societies, the propriety of holding out to farmers greater encouragements, as an inducement for them to use oxen in tilling their land, which would be of essential service to the country, and prevent the want of good beef amongst the poorest of her majesty's subjects.

CHAP. XVI.

Methods for preparing Manure.

THE best methods for preparing good, strong, and cheap manure, and the most economical mode of applying it when prepared, in the growth of full crops of turnips and of corn, being the first steps in farming that ought to be attended to, the author is induced to recommend that much of the poorest land on a farm be thrown out of tillage; which will cause the parts that are in tillage to produce full crops. If the poorest lands will neither grow sainfoin or lucerne, they will serve for pasture or sheep walks if proper seeds are sown, and from thence the sheep may be folded on those parts of the farm which are in tillage; which almost insures a good crop of corn so far as the fold manure goes. On some farms, the poorest lands are too wet for sheep, but such may be rendered healthy and made fit for them by proper draining, chalking, and well ditching all round the land. There are men in all parishes to do the needful labour, which would ease the poor rates; the thing most wanted in the present times. Another good plan to help to keep up the heart of the land to bear full crops is, when the farm yard is free from dung, let it be covered all over with the best mould that can be got; it might often be procured from the outside of the fields by causing the

plough to go nearer the hedges, and thereby gain a great quantity of land. The author proposes to cover the yard about two feet thick; the mould after lying there, and being well foddered upon by cattle, will become a good, strong, and cheap manure, from the soak of the dung, which is the very essence of manure. He recommends also, a great quantity of young kind growing pigs to be kept in farm yards. Even if the growth of them only pay for their food, there will be great profit from the extra strength of the yard dung and the mould underneath. If a great quantity of pigs are kept there, it will cause the manure to be so strong in its nature, that turnips will grow so rapidly from it, as to preclude the danger of the fly destroying the crop, if the seed be good.

When the mould and dung are cast together in the yard before being carted out for turnips, as salt is so cheap, it is as well to mix a little with it; if only one sack to the whole yard, it will be of great service and reward the farmer much. If salt be sown on the land in proper quantities it is of great benefit; but if sown too thick it will destroy every plant that grows and prevent further vegetation. When manure is made so strong, a much less quantity per acre will make the turnips very good; then feeding them off the land with sheep, with a full allowance of hay, will be of the greatest benefit to future crops of corn, and cause an amazing increase of straw. So that manure made in this manner, will insure a good crop of turnips, and be profitable to the farmer in other ways; for it will not only enable him to keep more sheep, but his land, by this method, will produce so much more straw that his manure heaps will be double the size they were the preceding year, and his corn will not only be better in quality but greater in quantity.

As the author has so earnestly recommended a

greater quantity of young growing pigs to be kept in the farm yard to assist in making manure, he also, from experience, recommends that they have separate lodgings for the night, not more than ten in a place together; for if pigs are allowed to herd together, and they will if possible, those that are in the middle of the lot one night will be so much heated, that the next night they will be at the outside; so that by violent heats and colds their health will be so much impaired that they will not be found to thrive, which, of course, cannot be profitable to the owner. Many farmers keep only ten or twelve pigs when they should keep seventy or eighty in their yards, to increase and strengthen the manure; for turnips are the mother of corn; but are very difficult to raise, except good strong manure be applied to the land, to make them grow quicker than their enemies can devour them. So that much depends on the strength of the manure to raise the crop, and when saved, it will be of a more fattening nature in proportion to the strength of the manure. The author has seen in many farm yards where very little stock has been kept on the straw, that the dung has been so light and weak as to be scarcely worth the expense of carting it on the land: the loss, consequently, on the present and future crops, is incalculable.

As clover roots are a good manure of themselves, farmers should not be sparing of the seed; they generally sow it too sparingly. The author never saw a bad crop of corn after a full thick plant of clover or trefoil, except when eaten by the slugs owing principally to its not being well and closely fed down with sheep, before being ploughed and sown with wheat. If clover and trefoil be as thick as a mat on the ground, crops of corn are sure to be the better for it afterwards. Most farmers have an opportunity of purchasing manure, and

as it is the author's intention to point out the most profitable plans, he recommends to every stock farmer who occupies from two to three hundred acres of land, to purchase good strong manure enough to well dress over about five acres for sweed turnips.

What he means is, for the farmer to have an extra five acres of good sweed turnips as a reserve for stock of all kinds, when most in need, which is in the month of March, that being the most precarious month in the year for all kinds of stock. The extra five acres will well support them until the grass begins to grow, so as to pay well for the manure purchased: as five acres of sweed turnips at 6*d.* per bushel, will amount to £160, if five bushels per square rood. Five extra acres of good sweed turnips, for the month of March, will not only be found very profitable to the farmer to enable him to well support an extra quantity of sheep and other stock, but the said five acres of land will produce extra good crops of corn for years after. Simple as this plan may appear to many, yet it may be relied upon to benefit the farmer to a great amount, on a long lease of his farm.

The author thinks it a good plan when the greens of turnips are growing so fast as to injure the root, as they are required to last the sheep until the middle of April, to plough them in, which will preserve the turnip, and make the land kinder for barley.

The way in which many farmers '*plough and sow themselves out of doors*' is, when they plough and sow too much land; causing light crops of corn, by not keeping up the heart of the land by dressing it well for turnips. The author has seen one hundred acres of middling land which were sown with turnips after being lightly dressed over with weak manure, produce only half a fair crop,

and barley after in the same proportion. Now it appears to the author to be very evident, that had the whole of the manure been made stronger, by keeping more stock in the farm yard from whence it was taken, and had it been put on only fifty acres for turnips, that it would have produced more sheep feed than the hundred acres lightly manured, and barley also in the same proportion afterward. It is therefore clear, that cultivating the extra fifty acres indifferently is not only labour lost, at £2 10s. per acre, but the loss of the hay or sheep feed which it might have produced also. If we reckon the hay and sheep feed at only £2 per acre and add the cost of turnip seed, of fifty sacks of seed barley, and the expense of hoeing fifty extra acres of turnips—we shall find that the labor and expense thrown away in thus growing a less quantity of turnips and corn on a hundred acres than might have been grown upon fifty acres under a better system of management, will occasion a loss to the farmer of about £280. This is the sense in which he is said to ‘*sow himself out of doors.*’

It is no wonder that so many farmers are ruined by growing light crops, if we consider the high rents, tithes, poor rates, highway rates, labour, and blacksmith's and wheelers' bills; all of which must be paid from the light crops; and as the land is now subject to so many various and heavy expenses it is proper to keep up the heart of it to grow full crops to meet them; and the increase of manure will be in proportion to the goodness of the crops, and cause the land to produce straw enough to manure itself. When the farm yard is well stocked, as before stated, it will enable the land to meet the expenses it is subject to, with pleasure and profit to the cultivator: from this mode of treatment the dung cart is called the best farmer.

When the farm is deficient in cattle and pigs, it not only causes a scarcity of bacon but of corn ; although the occupier of the land stands in need of the most profitable plans to meet the expenses it is subject to. The difference in the strength of manure is as great as between strong beer and small : a very little strong beer strengthens a hard working and fatigued man, in the same manner as strong manure affects the land.

Farmers should bear in mind to make use of all their manure to increase sheep feed, previous to the land being sown with corn. When land is dressed for turnips and young seeds for sheep feed, the additional dressing left by the sheep not only causes the land to be doubly dressed, but it might be relied upon, that the succeeding wheat crop will be less subject to blight than when the land is dunged expressly for it.

CHAP. XVII.

Remarks on obtaining the most Profit, arising from the Grazing of both Beast and Sheep.

Stock beast should in general be purchased in the month of October or November ; there being at that time of the year a greater quantity to make choice from. The best to fatten and pay the grazier by their hard labour are, in general, those about five years old, which appear kind and healthy, have fine eyes, are of good growth, with wide hips, and a thin skin that feels like velvet to the hand.

When purchased at the time of year before mentioned, they generally go into the straw yard at night, when the master beast, not only gets the best of the fodder, but is continually driving

the others so much about as to prevent their improving as they ought to do. This induces the author strongly to recommend the stalling or tying up of each bullock separately every night and letting them out in the morning. If wintered on straw only, it will be seen, that from having dry and quiet lodgings the beast will be found in a much better and more forward state in the spring or about May-day, to be turned out for grazing. Then he recommends that such beast as cannot be got ripe and fat for market by or before harvest, should be kept on until christmas, or two months after. At that time they will have attained their full growth and be ripe for market, and (like a fat buck in season) the beef will be of the best sort, and obtain, of course, the best price, well rewarding the grazier for bringing his oxen to perfection at the proper and most profitable time of the year: as about michaelmas and for two months after, beef sells at the lowest price in the whole year. It is called the butcher's harvest, but it is the reverse to the grazier who is obliged to sell at that time; because beef is worth 2*d.* per lb more at the time above proposed for selling, over and above the extra weight of the bullock thus well fattened. So that the price per pound, extra weight, and superior quality of the meat, renders the keeping of such beast the two or three additional months very profitable, if they are properly fed.

And the best way to feed oxen, the last two months, for the christmas market, is, to let them have dry and fresh pasture reserved with sufficient good grass to supply them from November till christmas, let plenty of sweed turnips be scattered over the pasture, and a little good hay: the variety of food they would thus get, would make them thrive so fast that the cold weather

would not affect them. This method exceeds all others for profitable management.

A great number of beast may be fattened for the christmas market at a much less expense than stalling them, if a grazier has good land and it is dry enough for the necessary reserve of grass; and one acre of turnips expended in the manner above-mentioned, will go as far as three or four in stalling; besides which, much less expense is incurred in attending to them.

As at that time of the year hard frosts and snow may be expected, it will be prudent to preserve some turnips under cover, that the beast may have no check from want of them. If the beast be not sold to the butcher about christmas, and the weather should prove severe and the grass be short, then, of course, stalling and feeding them as well as possible from the produce of the farm will be the best plan.

Instead of preparing beast for the michaelmas or christmas market, it is more profitable for a grazier to reserve his feed, and to buy the best sort of half-fat beast to finish off about christmas, as they are likely to improve in value about 2*d.* per lb, over and above their increase in weight, if well fed for the last eight or ten weeks, or perhaps less time. A half-fat ox, weighing when purchased one hundred stone, or forty score, at 6*d.* per lb, will cost £20; now, allowing one-fourth for increase in weight and 2*d.* per lb in the quality of the beef, the ox which cost the farmer £20. will, after ten weeks (or less) good feeding, repay him £31 5*s.*

On a very moderate calculation, it is easy to gain £100 from ten good kind half-fat oxen, in about the time before mentioned, bought and fed on pasture as pointed out above, which saves a great expense, by avoiding stalling before christmas.

CHAP. XVIII.

On Feeding Sheep.

THE time for buying sheep for grazing is about the same as is pointed out for purchasing beast; that being a good time of the year to select good south-down wethers. They should be half-fat or nearly so, about three years old, and of the sort called six-tooths; and if they are from poor land it is so much the better. The advantage of having sheep in a forward state is, that they improve much better and faster than poor sheep on turnips, and are valuable at all times before the land is sown with barley; which makes them very convenient as well as profitable, for the sheep and turnips should be got off the land at the same time and so as to get the barley sown early. Keeping other sorts of sheep often causes the barley to be sown a month too late, which occasions a bad crop, and thereby neutralises a great part (if not the whole) of the profit on the sheep.

Respecting the fattening of sheep on turnips in the winter,—it seems useless to say much more on the subject, the utility of it being already so generally understood; the author however strongly recommends that they should have plenty of good hay to eat with the turnips; and great care should be taken that none of it be wasted, as is too frequently the case, for it will not only improve the land, but it will benefit and save the lives of many sheep: they will not be so likely to die in the turnip-field in bad weather as they would from the cold and watery nature of the turnips alone.

It will be found a beneficial plan to allow a great quantity of back feed if the weather has not been such as to rot the turnip shells; as sheep improve much faster when they can feed on the turnip shells after they have been sweetened by the sun. There is no waste in allowing sheep plenty of back feed,

but on the contrary it is very beneficial if the shells have not been rotted by frosts and thaws.

The best method of getting sheep fat and ripe for market is, to allow them a great plenty both of turnips and hay, with salt in their troughs (now it is so cheap), which will benefit both the sheep and the future crops, particularly where the land is subject to the wire-worm. Farmers in general injure themselves very much by not allowing sheep a proper quantity of hay with their turnips and neglecting to keep a piece of dry pasture in reserve for them (in the same manner as pointed out for the beast), to change them into in the worst weather in the winter.—It is very profitable to have some good feed to finish sheep and lambs for market, and it should not be spared at that time.

In the summer as well as in the winter it is a very excellent and profitable plan to have a field of rape adjoining one of young seeds (such as clover and trefoil mixed), so that the sheep and lambs which are fattening may change from one sort of food to the other as often as they please. There should be no hurdles used to prevent them from having the full range over both fields; and the rape in particular should not be hurdled off as is customary with turnips, because that plan leads to the destruction of the rape plant; which if not overstocked, will keep sprouting till the frost sets in. The rape should be sown in May, or as soon as the land can be well prepared, and care should be taken not to sow it too thick or too thin: if sown too thick it will not be of so fattening a nature, neither will it support so many sheep. (It is a good plan to hoe rape, and to leave twice as many plants as you would of turnips.)

The author has practised the method here recommended, and it is the best he knows of to make sheep and lambs very fat about the beginning of August, when fat lambs sell well: when he was

young, his father had eight acres of rape adjoining about ten acres of clover and trefoil mixed, and having a number of ewes and backward lambs, he was fearful that he should not get them fat for market; but to his great surprise, after they had been changing themselves in their own way, over these two fields, the lambs became so very fat that they weighed seventeen and eighteen lb per quarter. The rape causes an extra quantity of milk for the lambs.

It frequently happens that part of a field of seeds fails;—any case of that kind will furnish an opportunity to make the trial which is so strongly recommended.

Rape may be fed with sheep when it gets to the size of a good cabbage plant, but it must not be overstocked lest the sheep should injure the stems. When stocked fairly and not sown either too thick or too thin, it will (if the land has been well dressed), keep and fatten a great number of sheep, provided they have the chance of ranging at will in the manner above described.

But this is only recommended for sheep and lambs intended for the butcher; as this feed would injure stock sheep, which would not improve so well after it elsewhere. Such sweet feed is only suitable to finish for the butchers' market.

CHAP. XIX.

Observations on Stock Ewes.

IN all cases where ewes and lambs are not intended for fattening, the author recommends farmers so to manage their stock ewes that they may drop their lambs about the beginning of April; not only because the ewe will in that case winter much better, but with much less food; and this will enable the farmer to keep a much larger stock

of ewes on the same quantity of land, and, of course, to breed more lambs; and it is certain that the loss will not be by far so great as it generally is when they have their fall in the more severe part of the winter. When the lambs fall so near the spring they seldom meet with any check in their growth, and therefore they are sure to be of as good a size, by michaelmas, as the lambs that are a month or two older.

Gentlemen may convince themselves of the propriety of adopting this course with their stock; for if they will only notice those ewes which happen to be later than the general flock, they will observe more wool on their backs, while the reverse will be but too apparent in the ewes that have lambed early, for those will be much poorer in a general way. So that farmers, by keeping the best sort of ewes and adopting this course, will find it more profitable to them than any other they can pursue. When a farmer enters on a stock, where a flock of sheep is required to breed from, much will depend on their sort, size, and growth. They should be as small and close made as it is possible to breed them. They should be short legged, with a short thick neck, and be well woolled: such a small and hardy sort winter so well, that there might be double the quantity kept on the land more than the larger sort of sheep, particularly where feed is rather short. They will fatten in about half the time of the larger sort, and will be more saleable and profitable; as two sheep that weigh one hundred lb, will sell for five or six shillings more than one of the same weight. In fact, the small close sort will live where the large sort would starve; and two small close sheep can be wintered at less expense than one of double their weight.—It is humane and profitable to be a good sheep master.

The author has pointed out methods to get im-

mense quantities of sheep feed for summer and winter; yet there is something wanting to make the sheep more comfortable during the most severe part of the winter: which is, to have a dry and warm lay field, or pasture, which has not been fed after michaelmas, but kept as a reserve to put sheep into when the most severe weather sets in, to prevent their getting poor: thus less hay will be wanted and sheep will do much better by having a fine, fresh, and dry pasture. This might often prevent a farmer giving his ewes turnips before lambing, which ought to be avoided; as the author has known, in a flock of ewes that had been kept on turnips before lambing, this feed cause the lambs to be so much larger than the natural size, that about one out of ten of both ewes and lambs died, owing to the hard time in lambing. Many could not lamb at all, owing to feeding on turnips, which filled the ewes with water. It is a cruel plan to put over large rams to small ewes: and, as I have said before, it is much more profitable to breed a close sort of sheep: they fatten sooner, sell for more, and winter better than a great hollow sheep, and two for one might be kept. Wet and cold weather much injures sheep; and where they have an opportunity of getting under cover in rough weather, they winter much better from having dry lodgings; so there is no doubt, that could there be a moveable hovel or range for sheltering sheep in the most severe part of the winter, placed in the reserved pasture, which might be moved to any part of the field by horses, the same as a sledge, many thousands of sheep would thus be preserved from the inclemency of the weather; and considerably more than the expense of such an erection would be annually saved to the farmer. As sheep are so very profitable to their owners, those who provide well for them generally provide well for themselves and families.

CHAP. XX.

To prevent the Rot in Sheep.

It is well known that wet land will rot sheep ; and it sometimes happens that graziers and others cannot avoid feeding them on it ; but when that is the case, the author recommends good hay to be given to the sheep in racks as often as they want it, which is a preventive against the rot. But when stock sheep are likely to remain on the land for yearly breeding, this will be too dangerous an experiment, for from length of time they may be affected with the disorder ; and until the land be made dry and the dangerous places well chalked, a farmer would not exercise sound judgment if he continued a flock of sheep on that sort of land, even if he supplied them well with hay.

CHAP. XXI.

Remarks on the Poor Rates, Employment of the Poor, &c.

To protect the agricultural interest from the pressure of the poor rates, has long occupied the attention of the most able men in all parts of the kingdom ; and it has not escaped the notice of the author ; who, unable to assert that he has conceived the proper mode of effecting so important an object, is nevertheless vain enough to hope, that considerable advantages may be derived by the community from a publication of his views on this interesting subject ; and as it is by no means unconnected with the several other matters contained in this work, he conceives that they may properly be embodied in it. In doing which, he respectfully submits the following propositions for consideration, confident that a generous public will give him credit for his good intentions, however impracticable or objectionable the scheme may appear.

The author, in the first place, considers the present period to be a very favourable time for purchasing land at a cheap rate, since the poor rates and tithes amount so nearly to its annual value in some cases. Supposing that twenty acres of such land could be purchased at £20 per acre in every parish, and that it could be exempted from poor rates and tithes; the bestowing of suitable portions of this land upon the industrious labourers having families, would enable them to grow potatoes, and to keep a few pigs to supply their families with meat and their gardens with manure for their succeeding crops; which, together with the proceeds of their daily labour, (it being intended that they should cultivate the land thus bestowed upon them after hours of business), would materially assist them, and thereby considerably reduce the poor rates and prove of essential service to the agricultural interest.

The next consideration is, by what means could this object be attained? With reference to that point, the author is of opinion, that the legislature might impose a moderate property tax upon all capitalists who have funded property, as well as others; to continue in force so long only as might be found necessary for the purchase of needful land, exclusively for the use of the poor as above mentioned. In parishes where land cannot be provided for the poor in this way, a proportion of the tax might be invested in the government funds, for the use and in the names of the churchwardens and overseers of such parishes, the interest whereof should be applied solely towards renting land for the use of their own poor; by which means great individual benefit would be bestowed upon the industrious labourer with a large family, and a much greater and more lasting benefit upon the community in general by enabling such men to sustain their moral independence.

Should the foregoing proposition appear impracticable, the author would strongly recommend the adoption of the following means of relieving the landowner, the farmer, and the poor: viz. there are various narrow slips of land near the hedges on every estate, which are wholly unprofitable to the farmers for growing corn; if they would permit their labouring men to cultivate these slips for their own advantage after finishing their daily labour, they would be thereby enabled to provide their families with potatoes, which would assist them considerably through life, and would, no doubt, diminish the poor rates. The labourers would then go to their work with more strength and cheerfulness; because they would be stimulated to exertion by the bounty of their employers. It is the interest of the farmer to assist his labourers, and not to pay them less attention than he does his flock of sheep. And if the farmer would give his labourer the carriage of a load of seaweed, which is to be got on all our shores at certain periods, (and would be practicable in all cases where the land is within the distance of ten miles of the sea,) it would benefit him very much,—as that is excellent manure for a crop of potatoes: by applying it lightly in the trench, on the plants, before they are covered with the soil, it will insure a double crop and improve the land for whatever may follow.

Employment being the source of the comfort and well-doing of the poor—the author earnestly recommends that all waste and neglected land should be brought into cultivation. There are immense tracts of land in England and Ireland very capable of improvement, and the neglecting to employ the poor thereon is a great waste of the national means for raising food. The community suffers an annual loss by every improveable acre that lies idle—and it is surprising that this impor-

tant fact should be looked upon with indifference whilst the workmen are asking for employment in vain, and the deficiency occasioned by the neglect of this great store of employment and wealth, must continue to be drawn from the estates of the rich and the hard earnings of the careful and industrious in the other classes of the community.

Landlords would find it their interest to improve their estates by draining, chalking, &c. Although it would occasion a present outlay, the benefit would be extensive and permanent: it would insure their rents and a comfortable living for their tenants, would give employment to the labourer and make the call of the overseer less frequent.

It would be very encouraging to hear that her majesty's government were earnestly turning their attention to the extension of needful cultivation over waste and neglected lands in proportion to the increasing population, so as to subdue their wants. Money expended in war expeditions never returns; but if laid out in improving our native soil, the land never proves ungrateful; it produces needful food, and returns in its benefiting journey of circulation profit to many classes; because if the labouring man be fully employed and fairly paid, he will have wherewith to buy clothing and bedding for himself and family, which gives employment to the manufacturer and the tradesman.

Both in England and Ireland, where employment is much wanted, there are a great number of wet vales that are now useless, but which might by the labour of man, be drained and made good fatting land to feed and fatten millions of sheep and beasts for the supply of our markets, on easy terms.

The author, as a source of employment for the labouring poor, recommends the draining and ditching of wet arable, meadow, pasture, and coppice land: by which means the arable produce

would be doubled, the meadow and pasture the same, and the growth of timber and underwood would be much improved; independent of the advantage which would arise from thus preventing the flocks being affected by rot; which generally arises from wet pastures. Tracts of rotten land might also be rendered productive by similar means, giving additional employment to the poor and an ample return to the owner.

Proprietors of chalk pits may also give employment to the poor in pulverising the chalk into floury particles for dressing land, which being used in quantities of even a few bushels to the acre, (as first proved and recommended by the author,) will make coarse or sour meadow or pasture, very sweet and valuable feeding. It will also materially improve almost all kinds of arable land, and insure a much quicker return than when laid on in the lump. Besides the great saving thus effected in carriage (a much smaller quantity in this state being found to answer the purpose,) it is peculiarly adapted for meadow and pasture, where chalk in the lump is apt to get like a shell under the surface and greatly prevent the growth of the herbage.

As another source of employment, the author recommends the second hoeing of turnips; which may be done at about 4s. per acre, and would be likely to improve the crop to the amount of 20s. per acre, besides cleaning the land for the future crop of corn.

Immense quantities of grazing and wheat land might be obtained by employing the poor in raising embankments to prevent the overflowing of the sea; which would help to reduce the poor rates, and add greatly to the wealth of the country. The author can speak from personal experience in this matter; some years ago he was employed in recovering a large tract from the sea near Chiches-

in their attempts to do it, and an outlay of about thirteen thousand pounds had been made in vain. The tide entered by a channel twenty feet deep at low water, and baffled all the efforts of the engineer to shut it out, although he had one hundred men employed under him for that purpose a considerable time. The author, however, upon a plan entirely his own, succeeded in stopping out the tide, and effectually recovered a tract of four hundred acres which, in a few years, became good land for the production of corn and the fattening of cattle.

The better state of cultivation the land is in, the greater the profit and advantage will be to the community; and it is clear, that if the poor of every parish were to be well employed, an extra hundred loads of wheat might be grown in many parishes, every year; whereby the purchasing of foreign corn would be rendered unnecessary, and which ought to be studiously avoided if possible; for by purchasing foreign corn we employ the foreign labourer, and that too, at a time when our own labouring poor are wandering about the country half starved, for want of employment; which would not be the case if the circulating medium was kept at home, and not sent out of the country in the purchase of foreign corn.

Much employment might be given to the poor in the planting of orchards near farm houses, on well sheltered good dry land. This has been so greatly neglected as to lessen considerably the growth of apples in this country, and to render them so exceedingly scarce at and near Christmas, as to be about equal in value to oranges.

Spade cultivation between the young trees would give much employment, and a more general growth of fruit would produce much advantage, by preventing our being obliged to purchase in the French and other markets.

The evil is great in purchasing of foreigners what might be grown in our own country. It is the author's opinion, that cultivation might be improved and extended on neglected lands, so as to prevent the want of foreign corn, and give full employment to numbers of poor industrious families. It will no doubt be said, that many parishes have not money to furnish such needful employment; as it all goes for rent, tithes, and taxes; and that until such expenses are lessened, agriculture cannot be relieved. The cultivator should take care to rent land in proportion to the value of the produce, so as to pay tithes, rent, taxes, and other expenses; to do which, the land ought to make four rents at least, by which he would be enabled to meet all his payments, to obtain a fair living for himself and family, and to save a percentage for the interest of the capital employed therein. Hence a farmer ought to be very circumspect and nice in his calculations, allowing a fair average price for a fair average crop: not forgetting the losses he may sustain by blight, loss of cattle, &c. &c., which so often blast the farmer's hopes.

As another source of employment for the poor, the author suggests the employment of men, women, and children, to beck over fallows nearly as deep as the plough would go, which may be done in fine weather to great advantage; since the expense will not exceed that of ploughing, and it will do twice the service in cleansing and pulverizing the land ready for a crop of turnips, besides giving employment previous to the hay making season, and rendering it unnecessary to employ so great a number of horses for tillage, which would otherwise be wanted. *Let it always be remembered that the poor must be fed even if not employed.*

Also some coppice land may give more employment to the poor and profit to the owner; for

after cutting the underwood of ten or twelve years' growth, the land is so free from grass, that by becking it lightly between the stems, it would produce one good crop of potatoes, being manured by the rotting of the dead wood and leaves from time to time, unless the land has been too much shaded by timber trees; and if planted by careful workmen, the first shoot of the underwood and young timber plants will be benefitted by it: and it is not unlikely, that the crop of potatoes would leave more profit than the first ten or twelve years' growth of the underwood, independent of the employment thus given to the poor.

The author is also of opinion, that landlords should strenuously assist their tenants in improving their estates; not only because it would enable the tenant to pay his rent when it becomes due, but it would also reduce the poor rates, by giving employment, and by preventing the poor from becoming so heavily chargeable to the parish. Where it is difficult to procure land for the use of the agricultural poor in any other way, it would be greatly to the interest of the farmers of a rural parish, if they were mutually to agree to set apart one acre in every hundred of their several farms (or even more) for the use of their labourers. This would enable them to keep their families off the poor book—and such a portion of a farm would not be missed—for it is not the quantity of land that fills the barns, but a good system of management.

If the cultivator will farm his land as these few pages direct, a good slice of a farm, given to the poor would not be missed. As a proof, the author surveyed a farm of six hundred acres, which was but indifferently farmed. He succeeded in getting the farmer to let off three hundred acres of it, to keep more sheep, and to provide well for his flock, which caused him to grow more corn on

three hundred acres than he before grew on the six hundred. It can be clearly proved, that the extra profit on the sheep, and the rent and expenses saved, prevented the farmer from being ruined. It may be relied upon, that it would be much better to part with some land to the poor than to relieve them with money. If government would allow a sufficient bounty to every parish that would furnish needful employment for able men to earn on an average 2s. 6d. per day, throughout the year, it would be an effectual remedy to reduce the poor rates. The poor being thus fully employed and fairly paid, would be the means of greatly improving trade, and all classes would happily feel the beneficial effects which would in a short time result from such a system.

ADDENDA.

Further Remarks on the Turnip Crop.

THE turnip crop is the most important crop that the farmer grows. It has been shewn in a former part of this treatise,—that it is the mother of corn; and therefore, upon its success or failure, the farmer's future prospects may be said, in a great degree, to depend. It is impossible to bestow too much care and vigilance upon the preparation for this important crop; or upon the plant in the different stages of its growth; for it is beset with many enemies. The destructive fly which attacks it in its first stage, and often carries off the most promising crop before it reaches the rough leaf, is well known to the experienced cultivator, and the author has, in the former chapters of this treatise, pointed out the best mode of guarding against the ravages of that destructive adversary, and also of the grub, which attacks it in its future stages. But a new enemy has of late entered the field to blight the prospects of the farmer at a time when he used to consider his crop safe from the attacks of its old enemies:—the *black palmer* has, within the last few years, made its appearance in some parts of the country, and like the locust of old, has left the fields it has visited barren and desolate. This new enemy appears after the plant has attained the broad leaf, and sometimes not till after the turnip has arrived at a tolerable size; but in a few days the leaf is wholly consumed, and the growth of the bulb entirely ruined. This palmer is the larva of a red-and-brown fly, called the saw-fly, which deposits its eggs on the under side of the leaf, and they are brought to maturity by a few warm

sunny days. After running its destructive course, it buries itself in the earth, and remains in the pupa (or chrysalis) state, till the next summer, when it returns in the perfect form (the red-and-brown fly,) to perpetuate the mischief of the preceding year.

The author earnestly recommends the farmer to use every means in his power to exterminate this destructive enemy; and to put those means into operation the first hour the palmer makes his appearance, or he will establish a nursery for the ruin of his future crops.

Many plans have been tried for arresting the progress of this destructive visitor after he has made his appearance; but—prevention is better than cure,—and with this plain history of the rise and progress of the evil before him, it is hoped that every cultivator will turn his attention seriously to the subject, and that some effectual remedy may soon be discovered to crush the mischief in its dormant state.

The most effectual mode yet resorted to, for clearing the field of the palmer, has undoubtedly been, the employment of women and children to pick them off the plants from day to day, as fast as they appeared, and to crush and destroy the eggs not then hatched. But the expense of this plan will, it is feared, deter many farmers from adopting it; although it should be remembered that expenses in future years will be greatly lessened or wholly prevented, if the work be well done.

Another mode has been, to load a pole with bushes, or branches of strong furze, and to cause it to be dragged backward and forward by two men daily over the whole field on their first appearance—and this has in some cases saved a large part of the crop: it destroys great numbers of the palmers, and detaches quantities of the eggs, which will not come to maturity on the earth.

Another mode that has been put in practice, has been to have a slight trough of about ten or twelve feet long and eight or ten inches wide at the top dragged backward and forward over the field, so that one edge of the trough should dip under the leaves and scrape their under sides as it is dragged forward:—this plan is found to detach and bring away great quantities of the palmer, and if persevered in will save a large part of the crop. The trough might with advantage be mounted on a small light wheel at each end, and in that case, might be driven forward by one man. Or a light iron frame with canvas sides (instead of thin board) would answer the purpose.

A flock of hungry ducks turned into the field is the most simple as well as the least expensive remedy; and if the farmer should have a very numerous flock and would let them take the field immediately the enemy makes his appearance—the business might perhaps be safely left to them; and it would answer the farmer's purpose to buy young ducks for this use, as they are very fond of the black palmer for food, and would be found to improve very fast during the progress of their work, so as to render them fit for market, and thus a profitable return would be made for the outlay.

The evil is however of so serious a nature, that the author would earnestly recommend the cultivator to resort to any, or all these different means if necessary and they should be within his reach, to stop the progress of the present evil. But he would recommend to all parties interested in the business, to turn their attention to the discovery of some kind of dressing for the land which will destroy the insect in the chrysalis stage.

Slacked lime and soot have been employed against the palmer in vain.

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